Er-doped aluminium oxide waveguide amplifiers

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Within the EU STREP project "Photonic integrated devices in activated amorphous and crystalline oxides" (PI-OXIDE, http://pi-oxide.el.utwente.nl/), 6 partners are developing integrated optical devices based on erbium-doped layers of amorphous Al_2O_3 and crystalline Y_2O_3. In Al_2O_3:Er channel waveguides structured by chlorine-based reactive ion etching [1], we have recently achieved gain with a maximum of 0.7 dB/cm at 1533 nm and a tuneability of 35 nm [2].

[1] J.D.B. Bradley, F. Ay, K. Wörhoff, M. Pollnau, Appl. Phys. B **89**, 311 (2007).

[2] J.D.B. Bradley, D. Geskus, T. Blauwendraat, F. Ay, K. Wörhoff, M. Pollnau, A. Kahn, H. Scheife, K. Petermann, G. Huber, Advanced Solid-State Photonics Conference, Nara, Japan, 2008, paper WB10.